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SEARCH REQUEST FORM
Scientific and Technical Information Center

Requester's Full Name: Pinchus Laufer
Art Unit: 2100 Phone Number 272-3599
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Examiner #: 73139 Date: 3/08/06
Serial Number: 10/614,808
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Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Litigation
6,470,432

Inventor : Wkoji Ozawa et al. O.G. Date: April 11, 2006

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Type of Search

Vendors and cost where applicable

Searcher: Shirelle Green

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Pinchus
SPRE, TC 2100
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plaufer@uspto.gov

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6470432

[Link to Claims Section](#)

October 22, 2002

External storage control device and data transfer method between external storage control devices

INVENTOR: Ozawa, Koji - Odawara, Japan (JP); Sano, Kazuhide - Odawara, Japan (JP); Koide, Takeshi - Odawara, Japan (JP); Nakamura, Katsunori - Odawara, Japan (JP)

APPL-NO: 987095 (09)

FILED-DATE: November 13, 2001

GRANTED-DATE: October 22, 2002

PRIORITY: January 10, 1996 - 8-002050, Japan (JP)

ASSIGNEE-AT-ISSUE: Hitachi, Ltd., Tokyo, Japan (JP), 03

ENGLISH-ABST:

In a data processing system in which main and sub disk storage devices are under the control of individual each disk control devices, the write processing time is reduced by selectively sending data according to the command-chaining time between main and sub disk control devices. A section for judging cable length and function of the sub disk control device 36 estimates command-chaining time between a pair of main and sub disk storage devices. The channel command analyzing section 31 estimates the number of records to be transferred and the length of a record using a LOCATE RECORD command. The command judgment section for the sub disk control device 32 optimizes the command-chain to be issued to the sub disk control device using the above-mentioned information. Then, the section for issuing command to the sub disk control device 35 issues the optimized command chain. Thus, a shorter transmission time is realized by either sending individual records or an entire track of data.

PARENT-PAT-INFO:

This is a continuation application of U.S. Ser. No. 09/375,357 filed Aug. 17, 1999, now U.S. Pat. No. 6,321,292, which is a divisional application of U.S. Ser. No. 08/779,471 filed Jan. 8, 1997, now U.S. Pat. No. 5,978,890 issued Nov. 2, 1999. The entire contents of these prior applications are hereby incorporated herein by reference.

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us6470432/pn

** SS 1: Results 1

Search statement 2

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1/1 PLUSPAT - (C) QUESTEL-ORBIT- image

PN - US2002032834 A1 20020314 [US20020032834]

PN2 - US6470432 B2 20021022 [US6470432]

TI - (A1) External storage control device and data transfer method between external storage control devices

PA - (A1) HITACHI LTD (US)

PA0 - Hitachi, Ltd.

PA2 - (B2) HITACHI LTD (JP)

IN - (A1) KOIDE TAKESHI (JP); SANO KAZUhide (JP); OZAWA KOJI (JP); NAKAMURA KATSUNORI (JP)

AP - US98709501 20011113 [2001US-0987095]

FD - Cont. of: US 09375357 - 19990817 [1999US-0375357] GRANTED

- Cont. of: US 6321292 - 0 [US6321292]

- Divsn. of: US 09375357 - 19990817 [1999US-0375357]

- Divsn. of: US 08779471 - 19970108 [1997US-0779471] GRANTED

- Divsn. of: US 5978890 - 0 [US5978890]

PR - US98709501 20011113 [2001US-0987095]

- JP205096 19960110 [1996JP-0002050]

- US37535799 19990817 [1999US-0375357]

- US77947197 19970108 [1997US-0779471]

IC - (A1) G06F-013/00

EC - G06F-003/06D

- G06F-003/06M

PCL - ORIGINAL (O) : 711167000; CROSS-REFERENCE (X) : 711112000 711156000

DT - Corresponding document

CT - US3990055; US4451884; US5155845; US5235690; US5247665; US5572699; US5588012; US5613155; US5625840; US5644787; US5740465; US5901327; US5940865; US5996045; US6003114

STG - (A1) Utility Patent Application published on or after January 2, 2001

STG2- (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001

AB - In a data processing system in which main and sub disk storage devices are under the control of individual each disk control devices, the write processing time is reduced by selectively sending data according to the command-chaining time between main and sub disk control devices. A section for judging cable length and function of the sub disk control device 36 estimates command-chaining time between a pair of main and sub disk storage devices. The channel command analyzing section 31 estimates the number of records to be transferred and the length of a record using a LOCATE RECORD command. The command judgment section for the sub disk control device 32 optimizes the command-chain to be issued to the sub disk control device using the above-mentioned information. Then, the section for issuing command to the sub disk control device 35 issues the optimized command chain. Thus, a shorter transmission time is realized by either sending individual records or an entire track of data.

UP - 2002-12